U.S. Serial No. 10/089,311

Reply to Office Action of: 04/05/2005

Family Number: P1999S007

AMENDMENTS TO THE CLAIMS

- 1. (currently amended) A fuel oil composition having improved cold-flow properties, said composition comprising a cold flow additive and the following components from various pipestills of a petroleum crude refinery process:
- a. a heavy fraction from a catalytically cracked heavy gasoil in turn derived from an atmospheric or a vacuum pipestill, said fraction having a boiling range of 170 to 380°C in an amount of 3 to 20% by weight and
- b. a gasoil product from an atmospheric pipestill, said product having a boiling range of 225 to 335°C in an amount of 30-50% by weight,

characterized in that components (a) and/or (b) in said composition is at least partially replaced by at least one light naphtha fraction (c) from an atmospheric or a vacuum pipestill, said light fraction (c) having a boiling range of 130 to 235°C and being present in an amount of 3 to 20% by weight, all weights being based on the total weight of the fuel oil composition.

- 2. (previously presented) The composition according to Claim 1 wherein component (a) has a boiling point in the range from 184 to 376°C.
- 3. (previously presented) The composition according to Claim 1 or 2 wherein component (a) is present in the composition in an amount ranging from about 5-18 % by weight of the total fuel oil composition.
- 4. (previously presented) The composition according to Claim 1 or 2 wherein component (b) has a boiling point in the range from about 244 to 330°C.
- 5. (previously presented) The composition according to Claim 1 or 2 wherein component (b) is present in the composition in an amount ranging from about 35-45 % by weight of the total fuel oil composition.

U.S. Serial No. 10/089,311

Reply to Office Action of: 04/05/2005

Family Number: P1999S007

- 6. (previously presented) The composition according to Claim 1 or 2 wherein the light naphtha fraction (c) has a boiling point in the range from 136 to 231°C.
- 7. (previously presented) The composition according to Claim 1 or 2 wherein the light naphtha fraction (c) is present in the composition in an amount from about 5-15% by weight of the total composition.
- 8. (previously presented) The composition according to Claim 1 or 2 wherein the light naphtha fraction has an aromatics content in the range from about 60-75% by weight.
- 9. (previously presented) The composition according to Claim 1 or 2 wherein the fuel oil composition contains in addition one or more distillate fractions selected from
- (d) a fraction from a vacuum pipestill has a boiling point in the range from about 200 to 400°C and is present in an amount ranging from about 3-7% by weight;
- (e) a fraction from an atmospheric pipestill which has a boiling point in the range from about 160 to 380°C and is present in an amount ranging from about 5 to 15% by weight;
- (f) a fraction from an atmospheric pipestill which has a boiling point in the range from about 230 to 350°C and is present in an amount ranging from about 15 to 30% by weight; and
- (g) a fraction from an atmospheric pipestill which has a boiling point in the range from about 210 to 420°C and is present in an amount ranging from about 3 to 8% by weight,

- 10. (previously presented) The composition according to Claim 1 or 2 wherein the fuel oil composition contains in addition one or more distillate fractions selected from
- (d) a fraction from a vacuum pipestill has a boiling point in the range from about 240 to 365°C and is present in an amount ranging from about 3-7% by weight;

U.S. Serial No. 10/089,311

Reply to Office Action of: 04/05/2005

Family Number: P1999S007

- (e) a fraction from an atmospheric pipestill which has a boiling point in the range from about 183 to 331°C and is present in an amount ranging from about 5 to 15% by weight;
- (f) a fraction from an atmospheric pipestill which has a boiling point in the range from about 231 to 344°C and is present in an amount ranging from about 15 to 30% by weight; and
- (g) a fraction from an atmospheric pipestill which has a boiling point in the range from about 216 to 395°C and is present in an amount ranging from about 3 to 8% by weight,

all weights being based on the total weight of the fuel oil composition.

- 11. (previously presented) The composition according to Claim 1 or 2 wherein the cold flow additive is present in said composition in an amount from 0.001 to 2.0% by weight of the total fuel oil composition.
- 12. (previously presented) The composition according to Claim 1 or 2 wherein the cold-flow additive is an ethylene vinyl acctate copolymer.
- 13. (currently amended) A method of improving cold flow properties of a fuel oil composition comprising a cold flow additive and the following components from various pipestills of a petroleum crude refinery process:
- a. a heavy fraction from a catalytically cracked heavy gasoil in turn derived from an atmospheric or a vacuum pipestill, said fraction having a boiling range of 180 to 380°C in an amount of 3 to 20% by weight and
- b. a gasoil product from an atmospheric pipestill, said product having a boiling range of 240 to 335°C in an amount of 30-50% by weight,

said method comprising replacing at least partially components (a) and/or (b) in said composition by at least one light naphtha fraction (c) from an atmospheric or a vacuum pipestill, said light fraction (c) having a boiling range of 130 to 235°C and being present

U.S. Scrial No. 10/089,311

Reply to Office Action of: 04/05/2005

Family Number: P1999S007

in an amount of 3 to 20% by weight, all weights being based on the total weight of the fuel oil composition.

- 14. (currently amended) The composition according to Claim 3 wherein component (b) has a boiling point in the range from about 244 to 300°C 330°C.
- 15. (currently amended) The composition according to Claim 3 wherein component (b) is present in the composition in an amount ranging from about 35-45% and the light naphtha fraction (c) is present in the composition in an amount from about 5-15% by weight of the total fuel oil composition.
- 16. (previously presented) The composition according to Claim 4 wherein component (b) is present in the composition in an amount ranging from about 35-45% by weight of the total fuel oil composition.
- 17. (previously presented) The composition according to Claim 3 wherein the light naphtha fraction (c) has a boiling point in the range from 136-231°C.
- 18. (previously presented) The composition according to Claim 4 wherein the light naphtha fraction (c) has a boiling point in the range from 136-231°C.
- 19. (previously presented) The composition according to Claim 5 wherein the light paphtha fraction (c) has a boiling point in the range from 136-231°C.
- 20. (previously presented) The composition according to Claim 3 wherein the light naphtha fraction (c) is present in the composition in an amount from about 5-15% by weight of the total composition.
- 21. (previously presented) The composition according to Claim 4 wherein the light naphtha fraction (c) is present in the composition in an amount from about 5-15% by weight of the total composition.

U.S. Serial No. 10/089,311

Reply to Office Action of: 04/05/2005

Family Number: P1999S007

- 22. (previously presented) The composition according to Claim 5 wherein the light naphtha fraction (c) is present in the composition in an amount from about 5-15% by weight of the total composition.
- 23. (previously presented) The composition according to Claim 6 wherein the light naphtha fraction (c) is present in the composition in an amount from about 5-15% by weight of the total composition.
- 24. (previously presented) The composition according to Claim 3 wherein the light naphtha fraction has an aromatics content in the range from about 60-75% by weight.
- 25. (previously presented) The composition according to Claim 4 wherein the light naphtha fraction has an aromatics content in the range from about 60-75% by weight.
- 26. (previously presented) The composition according to Claim 5 wherein the light naphtha fraction has an aromatics content in the range from about 60-75% by weight.
- 27. (previously presented) The composition according to Claim 6 wherein the light naphtha fraction has an aromatics content in the range from about 60-75% by weight.
- 28. (previously presented) The composition according to Claim 7 wherein the light naphtha fraction has an aromatics content in the range from about 60-75% by weight.
- 29. (previously presented) The composition according to Claim 3 wherein the fuel oil composition contains in addition one or more distillate fractions selected from
- (d) a fraction from a vacuum pipestill has a boiling point in the range from about 200 to 400°C and is present in an amount ranging from about 3-7% by weight;
- (e) a fraction from an atmospheric pipestill which has a boiling point in the range from about 160 to 380°C and is present in an amount ranging from about 5 to 15% by weight;

U.S. Serial No. 10/089,311

Reply to Office Action of: 04/05/2005

Family Number: P1999S007

- (f) a fraction from an atmospheric pipestill which has a boiling point in the range from about 230 to 350°C and is present in an amount ranging from about 15 to 30% by weight; and
- (g) a fraction from an atmospheric pipestill which has a boiling point in the range from about 210 to 420°C and is present in an amount ranging from about 3 to 8% by weight,

all weights being based on the total weight of the fuel oil composition.

- 30. (previously presented) The composition according to Claim 4 wherein the fuel oil composition contains in addition one or more distillate fractions selected from
- (d) a fraction from a vacuum pipestill has a boiling point in the range from about 200 to 400°C and is present in an amount ranging from about 3-7% by weight;
- (e) a fraction from an atmospheric pipestill which has a boiling point in the range from about 160 to 380°C and is present in an amount ranging from about 5 to 15% by weight;
- (f) a fraction from an atmospheric pipestill which has a boiling point in the range from about 230 to 350°C and is present in an amount ranging from about 15 to 30% by weight; and
- (g) a fraction from an atmospheric pipestill which has a boiling point in the range from about 210 to 420°C and is present in an amount ranging from about 3 to 8% by weight,

- 31. (previously presented) The composition according to Claim 5 wherein the fuel oil composition contains in addition one or more distillate fractions selected from
- (d) a fraction from a vacuum pipestill has a boiling point in the range from about 200 to 400°C and is present in an amount ranging from about 3-7% by weight;
- (e) a fraction from an atmospheric pipestill which has a boiling point in the range from about 160 to 380°C and is present in an amount ranging from about 5 to 15% by weight;

U.S. Serial No. 10/089,311

Reply to Office Action of: 04/05/2005

Family Number: P1999S007

- (f) a fraction from an atmospheric pipestill which has a boiling point in the range from about 230 to 350°C and is present in an amount ranging from about 15 to 30% by weight; and
- (g) a fraction from an atmospheric pipestill which has a boiling point in the range from about 210 to 420°C and is present in an amount ranging from about 3 to 8% by weight,

all weights being based on the total weight of the fuel oil composition.

- 32. (previously presented) The composition according to Claim 6 wherein the fuel oil composition contains in addition one or more distillate fractions selected from
- (d) a fraction from a vacuum pipestill has a boiling point in the range from about 200 to 400°C and is present in an amount ranging from about 3-7% by weight;
- (c) a fraction from an atmospheric pipestill which has a boiling point in the range from about 160 to 380°C and is present in an amount ranging from about 5 to 15% by weight;
- (f) a fraction from an atmospheric pipestill which has a boiling point in the range from about 230 to 350°C and is present in an amount ranging from about 15 to 30% by weight; and
- (g) a fraction from an atmospheric pipestill which has a boiling point in the range from about 210 to 420°C and is present in an amount ranging from about 3 to 8% by weight,

- 33. (previously presented) The composition according to Claim 7 wherein the fuel oil composition contains in addition one or more distillate fractions selected from
- (d) a fraction from a vacuum pipestill has a boiling point in the range from about 200 to 400°C and is present in an amount ranging from about 3-7% by weight;
- (e) a fraction from an atmospheric pipestill which has a boiling point in the range from about 160 to 380°C and is present in an amount ranging from about 5 to 15% by weight;

U.S. Serial No. 10/089,311

Reply to Office Action of: 04/05/2005

Family Number: P1999S007

- (f) a fraction from an atmospheric pipestill which has a boiling point in the range from about 230 to 350°C and is present in an amount ranging from about 15 to 30% by weight; and
- (g) a fraction from an atmospheric pipestill which has a boiling point in the range from about 210 to 420°C and is present in an amount ranging from about 3 to 8% by weight,

all weights being based on the total weight of the fuel oil composition.

- 34. (previously presented) The composition according to Claim 8 wherein the fuel oil composition contains in addition one or more distillate fractions selected from
- (d) a fraction from a vacuum pipestill has a boiling point in the range from about 200 to 400°C and is present in an amount ranging from about 3-7% by weight;
- (e) a fraction from an atmospheric pipestill which has a boiling point in the range from about 160 to 380°C and is present in an amount ranging from about 5 to 15% by weight;
- (f) a fraction from an atmospheric pipestill which has a boiling point in the range from about 230 to 350°C and is present in an amount ranging from about 15 to 30% by weight; and
- (g) a fraction from an atmospheric pipestill which has a boiling point in the range from about 210 to 420°C and is present in an amount ranging from about 3 to 8% by weight,

- 35. (previously presented) The composition according to Claim 3 wherein the fuel oil composition contains in addition one or more distillate fractions selected from
- (d) a fraction from a vacuum pipestill has a boiling point in the range from about 240 to 365°C and is present in an amount ranging from about 3-7% by weight;
- (e) a fraction from an atmospheric pipestill which has a boiling point in the range from about 183 to 331°C and is present in an amount ranging from about 5 to 15% by weight;

U.S. Serial No. 10/089,311

Reply to Office Action of: 04/05/2005

Family Number: P1999S007

Page 10

- (f) a fraction from an atmospheric pipestill which has a boiling point in the range from about 231 to 344°C and is present in an amount ranging from about 15 to 30% by weight; and
- (g) a fraction from an atmospheric pipestill which has a boiling point in the range from about 216 to 395°C and is present in an amount ranging from about 3 to 8% by weight,

all weights being based on the total weight of the fuel oil composition.

- 36. (previously presented) The composition according to Claim 4 wherein the fuel oil composition contains in addition one or more distillate fractions selected from
- (d) a fraction from a vacuum pipestill has a boiling point in the range from about 240 to 365°C and is present in an amount ranging from about 3-7% by weight;
- (c) a fraction from an atmospheric pipestill which has a boiling point in the range from about 183 to 331°C and is present in an amount ranging from about 5 to 15% by weight;
- (f) a fraction from an atmospheric pipestill which has a boiling point in the range from about 231 to 344°C and is present in an amount ranging from about 15 to 30% by weight; and
- (g) a fraction from an atmospheric pipestill which has a boiling point in the range from about 216 to 395°C and is present in an amount ranging from about 3 to 8% by weight,

- 37. (previously presented) The composition according to Claim 5 wherein the fuel oil composition contains in addition one or more distillate fractions selected from
- (d) a fraction from a vacuum pipestill has a boiling point in the range from about 240 to 365°C and is present in an amount ranging from about 3-7% by weight;
- (e) a fraction from an atmospheric pipestill which has a boiling point in the range from about 183 to 331°C and is present in an amount ranging from about 5 to 15% by weight;

U.S. Serial No. 10/089,311

Reply to Office Action of: 04/05/2005

Family Number: P1999S007

- (f) a fraction from an atmospheric pipestill which has a boiling point in the range from about 231 to 344°C and is present in an amount ranging from about 15 to 30% by weight; and
- (g) a fraction from an atmospheric pipestill which has a boiling point in the range from about 216 to 395°C and is present in an amount ranging from about 3 to 8%. by weight,

all weights being based on the total weight of the fuel oil composition.

- 38. (previously presented) The composition according to Claim 6 wherein the fuel oil composition contains in addition one or more distillate fractions selected from
- (d) a fraction from a vacuum pipestill has a boiling point in the range from about 240 to 365°C and is present in an amount ranging from about 3-7% by weight;
- (e) a fraction from an atmospheric pipestill which has a boiling point in the range from about 183 to 331°C and is present in an amount ranging from about 5 to 15% by weight;
- (f) a fraction from an atmospheric pipestill which has a boiling point in the range from about 231 to 344°C and is present in an amount ranging from about 15 to 30% by weight; and
- (g) a fraction from an atmospheric pipestill which has a boiling point in the range from about 216 to 395°C and is present in an amount ranging from about 3 to 8% by weight,

- 39. (previously presented) The composition according to Claim 7 wherein the fuel oil composition contains in addition one or more distillate fractions selected from
- (d) a fraction from a vacuum pipestill has a boiling point in the range from about 240 to 365°C and is present in an amount ranging from about 3-7% by weight;
- (e) a fraction from an atmospheric pipestill which has a boiling point in the range from about 183 to 331°C and is present in an amount ranging from about 5 to 15% by weight;

U.S. Serial No. 10/089,311

Reply to Office Action of: 04/05/2005

Family Number: P1999S007

- (f) a fraction from an atmospheric pipestill which has a boiling point in the range from about 231 to 344°C and is present in an amount ranging from about 15 to 30% by weight; and
- (g) a fraction from an atmospheric pipestill which has a boiling point in the range from about 216 to 395°C and is present in an amount ranging from about 3 to 8% by weight,

all weights being based on the total weight of the fuel oil composition.

- 40. (previously presented) The composition according to Claim 8 wherein the fuel oil composition contains in addition one or more distillate fractions selected from
- (d) a fraction from a vacuum pipestill has a boiling point in the range from about 240 to 365°C and is present in an amount ranging from about 3-7% by weight;
- (c) a fraction from an atmospheric pipestill which has a boiling point in the range from about 183 to 331°C and is present in an amount ranging from about 5 to 15% by weight;
- (f) a fraction from an atmospheric pipestill which has a boiling point in the range from about 231 to 344°C and is present in an amount ranging from about 15 to 30% by weight; and
- (g) a fraction from an atmospheric pipestill which has a boiling point in the range from about 216 to 395°C and is present in an amount ranging from about 3 to 8% by weight,

- 41. (previously presented) The composition according to Claim 3 wherein the cold flow additive is present in said composition in an amount from 0.001 to 2.0% by weight of the total fuel oil composition.
- 42. (previously presented) The composition according to Claim 4 wherein the cold flow additive is present in said composition in an amount from 0.001 to 2.0% by weight of the total fuel oil composition.

U.S. Scrial No. 10/089,311

Reply to Office Action of: 04/05/2005

Family Number: P1999S007

- 43. (previously presented) The composition according to Claim 5 wherein the cold flow additive is present in said composition in an amount from 0.001 to 2.0% by weight of the total fuel oil composition.
- 44. (previously presented) The composition according to Claim 6 wherein the cold flow additive is present in said composition in an amount from 0.001 to 2.0% by weight of the total fuel oil composition.
- 45. (previously presented) The composition according to Claim 7 wherein the cold flow additive is present in said composition in an amount from 0.001 to 2.0% by weight of the total fuel oil composition.
- 46. (previously presented) The composition according to Claim 8 wherein the cold flow additive is present in said composition in an amount from 0.001 to 2.0% by weight of the total fuel oil composition.
- 47. (previously presented) The composition according to Claim 9 wherein the cold flow additive is present in said composition in an amount from 0.001 to 2.0% by weight of the total fuel oil composition.
- 48. (previously presented) The composition according to Claim 10 wherein the cold flow additive is present in said composition in an amount from 0.001 to 2.0% by weight of the total fuel oil composition.
- 49. (previously presented) The composition according to Claim 3 wherein the cold-flow additive is an ethylene vinyl acetate copolymer.
- 50. (previously presented) The composition according to Claim 4 wherein the cold-flow additive is an ethylene vinyl acetate copolymer.

U.S. Serial No. 10/089,311

Reply to Office Action of: 04/05/2005

Family Number: P1999S007

- 51. (previously presented) The composition according to Claim 5 wherein the coldflow additive is an ethylene vinyl acetate copolymer.
- 52. (previously presented) The composition according to Claim 6 wherein the cold-flow additive is an ethylene vinyl acetate copolymer.
- 53. (previously presented) The composition according to Claim 7 wherein the cold-flow additive is an ethylene vinyl acetate copolymer.
- 54. (previously presented) The composition according to Claim 8 wherein the cold-flow additive is an ethylene vinyl acetate copolymer.
- 55. (previously presented) The composition according to Claim 9 wherein the coldflow additive is an ethylene vinyl acctate copolymer.
- 56. (previously presented) The composition according to Claim 10 wherein the cold-flow additive is an ethylene vinyl acetate copolymer.
- 57. (previously presented) The composition according to Claim 11 wherein the cold-flow additive is an ethylene vinyl acetate copolymer.